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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration

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Opportunity for Residency Training in the Navy

Applications for residency training are requested from Regular officers and those Reserve officers who have completed their obligated service under the Universal Military Training and Service Act, as amended.

Training is available for Regular officers in all of the major medical specialties. It is available for Reserve officers in Pathology, Orthopedic Surgery, Obstetrics and Gynecology, Pediatrics, and Urology. There are a few billets available for training in civilian hospitals in the specialties of Anesthesiology, Otolaryngology, Dermatology and Syphilology.

Residency training may be started immediately on completion of internship. It is now the desire of the Bureau of Medicine and Surgery to continue a resident in training without interruption until he has completed the formal training requirements leading to certification by an American Specialty Board. The procedure will be strictly adhered to in every case where the demands of the service permit and providing the trainee shows satisfactory progress. (ProfDiv, BuMed)

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Clinical Syndrome of Acute Renal Insufficiency

During the past decade, various names have been employed to describe the syndrome of acute renal insufficiency. The phrase, "lower nephron nephrosis," was popularized by Lucke in 1946, but the condition is also referred to as the crush syndrome, traumatic anuria, acute urinary suppression, hemoglobinuric nephrosis, "kidney shutdown," and necrotizing nephrosis. Yet the term acute renal insufficiency, or acute renal decompensation, is more truly descriptive of the altered physiology.

Acute renal insufficiency denotes sudden failure of the kidneys to produce urine in adequate volume and concentration to prevent the retention of toxic metabolites. It is analogous to a shock-like syndrome manifested by sudden decompensation or failure of the renal functions.

The gravity of the clinical and biochemical problem will depend upon the severity of the injury or illness and the response of the individual thereto. In the majority of cases of acute renal failure, body trauma initiates complete but transient anuria. This is followed in a few hours by a period of one, two, or even three weeks of severe oliguria with only 30 to 300 ml. of urine each day. Progressive uremia rapidly develops due to retention of metabolic waste products. If the patient survives this hazardous period, the oliguric phase is replaced spontaneously by diuresis characterized by increase in the daily urine volume from 300 or 400 ml. to, perhaps, 3000 or 4000 ml. during the next week or two with gradual clearance of toxemia.

The clinical course will vary greatly from patient to patient and is constantly fraught with great danger, not only during the phase of oliguria but also during the diuretic phase. Cardiovascular, gastrointestinal, and neuro-muscular signs and symptoms may appear, heralding extremely dangerous complications. The outcome will be determined largely by the physician's understanding and knowledge of the pathologic changes, not only in the nephrons, but also in the concomitant and extreme derangements of the basic physiology of vital bodily functions.

Intelligent history-taking must be predicated on a thorough knowledge of the causes of acute renal insufficiency which fall into three major groups. In the first instance, the immediate renal insult follows from trauma of massive wounds and multiple fractures, severe head injury, profound hemorrhage from any source, severe anoxia, carbon monoxide poisoning, and extreme fluid loss, as in intestinal obstruction or severe diarrhea. In the second group, excretion of pigment is the most dramatic feature. This promptly appears following the crush syndrome, incompatible blood transfusion, blackwater fever, hemolysis secondary to transurethral prostatectomy employing distilled water, severe burns, heat stroke, icterus neonatorum, hemorrhagic fever, and the hemoglobinurias in the crisis of sickle cell anemia. The third group is characterized by nephrotoxic substances or sensitizing agents which directly attack the nephrons.

This occurs in heavy metal poisoning from uranium, bismuth, mercury and phosphorus salts, or with toxic organic compounds such as, carbon tetrachloride, mushroom poisoning, blackwidow spider toxins, and certain snake venoms. It is all too frequent an occurrence in eclampsia and has been reported in sulfonamide sensitivity, and serum sickness, resulting from endotoxins of hemolytic staphylococci, meningococci, and murine typhus, and also following excess administration of nephrotoxic antibiotics such as thiomyacin, the bacitracins and the polymyxins.

These etiologic factors are of prime importance in establishing the diagnosis. This is not difficult when an accurate history of the patient establishes the fact that the urinary output of the patient has suddenly been reduced from a normal volume of 1000 or 1500 ml. to 50 or 250 ml. per day. If total anuria develops and persists for more than 24 hours, the probable cause is total obstruction of the urinary tract. This should be searched for diligently, and if found, should be promptly eliminated.

Prompt recognition of acute renal failure is mandatory if a fatal outcome is to be avoided by means of proper, conservative management during the very first few days or weeks of this alarming disorder. If the physician is alert to the probability of acute renal failure as a complication of traumatic events and overwhelming illness, the diagnosis is not particularly difficult. Many cases of mild renal decompensation are undoubtedly overlooked and proceed to full recovery either without benefit of, or in spite of, clinical intervention. Nevertheless, if the necrotic lesions of the renal tubules are sufficient in number and extent so that widespread degeneration of nephrons develops, acute renal decompensation becomes very serious and extremely difficult to manage, and too often, terminates fatally.

The diagnostician should be cognizant of the mild transient oligurias and azotemias which may accompany various combinations of dehydration, depletion of electrolytes, metabolic acidosis, and metabolic alkalosis. These derangements will usually disappear promptly with adequate hydration of the patient. If trauma is sustained without development of the shock syndrome, reflex anuria or transient oliguria may be present for several hours, is usually self-limiting, and neither precipitates nor indicates acute renal insufficiency. Bloody oliguria may be prominent also in renal vascular accidents, acute glomerulonephritis, extensive pyelonephritis, and in progressive exacerbations of chronic kidney failure. Bilateral ureteral calculi may cause sudden and total anuria, which also could result from obstruction of a single ureter if only one kidney is present. Overwhelming sulfonamide crystalluria may cause bilateral ureteral obstruction. Metastatic carcinoma within the pelvis may block both ureteral orifices and induce total anuria.

Other causes of extreme oliguria include rapidly advancing hypertensive cardiovascular disease associated with nephrosclerosis and bilateral occlusion of the renal arteries as by emboli, thrombi, or dissecting

aneurysm. Bilateral cortical necrosis of the kidneys can and does occur in overwhelming septicemia and as a complication of the toxemias of pregnancy. In both conditions, the urine is bloody and very scanty. Such possibilities should be borne in mind and ruled out. The chief asset in the differential diagnosis of sudden oliguria is an accurate history of the present illness, usually prolonged or profound shock following trauma.

Treatment is difficult and hazardous. It must be predicated on an understanding of the pathologic changes which alter the physiology of the renal tubule or lower nephron.

The basic principle of treatment during oliguria is the avoidance of overhydration (with blood or salt solution) which induces pulmonary edema. More patients are killed than cured by too energetic or overzealous therapy.

Fluid intake must be calculated accurately every 12 or 24 hours, based on the sum of fluid output (urine, stool, and vomitus) plus a daily allowance of 750 ml. to cover the "insensible loss" of water in the form of perspiration, and as water-vapor through the lungs. Ten or twenty percent Dextrose in distilled water for injection is the fluid of choice. This should provide 100 gm. of carbohydrate daily to prevent starvation ketosis.

Diuresis usually begins spontaneously from the 7th to the 12th day. Fluid volumes must now be calculated to allow for the greatly increased urine output, amounting to 3000 or 5000 ml. daily. Overestimation may precipitate pulmonary edema; underestimation will result in dehydration. As soon as vomiting ceases, the patient may be given nourishment by mouth in the form of carbohydrate and fat. A butterfat soup will provide high caloric content and is usually well tolerated in the late diuretic phase. Small amounts of protein (20 to 30 gm.) may then be added gradually to the diet.

In the event the diuresis fails to appear by the 10th to the 12th day, the danger of death from uremia or by potassium intoxication is very real. Emergency measures become imperative. They include peritoneal irrigation, gastrointestinal lavage, administration of ion-exchange resins, exchange transfusions or, preferably, extracorporeal dialysis by means of an artificial kidney. Approximately two-thirds of selected patients subjected to hemodialysis can be "saved" by this procedure (artificial kidney).

Blood transfusions are treacherous in the oliguric and early diuretic phases of the syndromes and, if employed, must be given sparingly, because of the danger of precipitating pulmonary edema. Diuretic agents can not be too strongly condemned at any time during treatment of the syndrome.

Conservative management--persistent and prolonged--is the preferable form of therapy (70% successful) in lower nephron nephrosis. Hemodialysis by means of an artificial kidney may be mandatory and often is life-saving in acute potassium intoxication and/or fulminating uremia. Yet, it is not an elective procedure comparable to definitive surgery. It should be reserved for true emergencies, which can be avoided in the main by early and accurate

diagnosis of acute renal insufficiency and adequate, but cautious, therapy of this syndrome. (1954 Wellcome Prize Essay, Military Medicine, Jan., 1955; Capt. C.C. Shaw, MC USN, Philadelphia Naval Shipyard, U.S. Naval Base, Philadelphia)

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Ballistocardiography

Ballistocardiography is admittedly a controversial subject. The technique clearly provides information about the circulation not obtainable by other readily available clinical methods. This has led to precipitous clinical use by some physicians with the inescapable result that diagnostic and prognostic claims have been made without clear justification. Opposed to this attitude are those who approach its clinical use with great caution and employ it as a research tool to try to learn more about the method and its possible application to cardiac disease. The group discussed in this article is in this latter category.

Three types of the ballistocardiograph are in common use: (1) the Starr High Frequency Undamped Bed; (2) the Low Frequency Critically Damped Bed of Nickerson, and (3) the Direct Body Pick-up, proposed and popularized by Dock. (Records may be recorded as displacement of the body or as velocity or acceleration.) The use of these three types of ballistocardiographs in the clinic has led to the accumulation of extensive empirical data on various disease states. The results of analysis and study of these data from many clinics are somewhat discouraging. Thus far, the ballistocardiogram has made little contribution to knowledge of valvular heart disease or of congenital heart disease, with the exception of coarctation of the aorta, in which a reasonably definite pattern is frequently found.

Many research groups have been intensively investigating the ballistocardiograph as a means of bridging a vital gap in the management of patients with coronary artery disease. Every experienced clinician knows that he is virtually powerless to predict the outcome of this disease. He never knows when it may appear in those he examines and finds to be apparently normal. Ballistocardiography has aroused keen interest because it provides a new and different kind of information about the functional state of the circulatory system, related to the pumping action of the heart. This interest was considerably sharpened by the finding of Starr that ballistocardiograms of patients with coronary artery disease are not infrequently abnormal when all other tests of the circulation are normal.

From similar studies by other workers, it is apparent that no specific wave form abnormality indicative of coronary artery disease, exists, but that the group of patients with coronary artery disease have a somewhat

higher over-all incidence of abnormal wave forms. Clinically normal subjects may have abnormal records and patients with coronary disease may have normal records, and one can only speculate upon the meaning of these data. Two points seem significant: (1) Abnormal ballistocardiograms are sufficiently uncommon in both young controls and young patients to make one suspicious of a young person with an abnormal record. (2) A normal record in older persons should, perhaps, be regarded with optimism.

The use of stress tests by the authors has been disappointing, and the only one that has been encountered that impressively differentiates between normals and patients with coronary artery disease, is one based on the effect of cigarette smoking.

Clinical comparisons of the ballistocardiographic abnormalities of patients and presumably normal controls are admittedly of great interest. However, they are not as yet considered a valid basis for definitive differential diagnosis--a goal which the champions of the technique hope may be attained.

This dependence upon empirical studies results from a deficiency of experimental work which intimately relates the form of the ballistocardiogram to the various physiologic events occurring in the circulatory system. The clinical data collected empirically by long-term patient and normal control studies alone is unlikely to provide the full knowledge that is needed. This possibility, coupled with the scant understanding of the physiologic meaning of ballistic waves, has made some investigators in the field look elsewhere for progress. It has long been recognized that the physical properties of both the body and the instruments employed to measure the cardiovascular forces generated within the body, were such as to make errors in methodology inescapable.

Some progress will come from completion and extension of follow-up studies already begun by the authors and others upon patients and presumably normal controls. At present it is hoped that these follow-ups will reveal that the coronary artery circulations of normal controls, with normal ballistocardiograms, remain efficient longer than those of controls with abnormal records. Statistically significant figures, upon which to base these hopes, will not be available until such long-term studies, utilizing the conventional and newer aperiodic ballistocardiographic techniques, are completed.

The ideal line of progress should connect definitively the physiologic events in the cardiovascular generator with the component waves of as faithful a force ballistocardiogram as can be recorded. When this ideal is attained, then ballistocardiography will provide, not only information upon the clinical cardiovascular efficiency not obtainable by other means, but also information which is desperately needed by the clinician to guide him both in his therapy and his predictions of the outcome of his patient's

ills. (Ann. Int. Med., Dec., 1954; M. L. Singewald, M.D., Johns Hopkins University School of Medicine, Baltimore, Md.)

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New Horizons in Cancer

Generally speaking, the early diagnosis of cancer offers the most hope for successful treatment. Educational programs to alert the public and to aid the physician in cancer diagnosis and treatment are yielding valuable dividends. Education alone, however, is not enough. Urgently needed to ease the cancer case-finding burden are practicable screening methods. An ideal solution to this problem would be a simple, inexpensive chemical or blood test as useful as the Wassermann test for syphilis.

Since 1948, a program to evaluate the old tests and to develop new ones has been conducted, with financial and technical assistance from the National Cancer Institute, by investigators at the medical schools of Tufts College and the universities of Washington, Alabama, Tennessee, and Kansas. Much good work has been done by these and other workers in this field and reported in the literature. None of the tests evaluated so far has been found sensitive and specific enough for clinical use. However, the approach seems hopeful. The fact that certain tests are effective to some extent is an indication that tangible changes do occur in the body of the cancer patient, and that these changes may be measurable in a diagnostic procedure. For instance, it is known that there are changes in the body chemistry of cancer patients. In some patients, with cancer of the prostate, the acid phosphatase level is increased. Measurement of prostatic acid phosphatase has been developed to the point where several laboratories are evaluating it as a means of diagnosing prostatic cancer. Other promising procedures now being investigated include a serum flocculation reaction, the use of radioactive tracers, and means of detecting abnormal steroid in the blood or urine.

Although a practical general diagnostic test for cancer appears to be still in the future, considerable progress has been made in the development of tests to aid in detecting cancer of specific sites. The most useful of these is the cytologic examination developed largely by G. N. Papanicolaou. It is established as a valuable complement to other clinical procedures in early diagnosis of cancer, particularly of uterine cancer. Many qualified persons have been trained in the cytologic test and numerous clinics and physicians in general practice are employing it routinely in cervical cancer diagnoses. Variations of the original cytologic technique have been developed to aid in the detection of cancer of the lung and of gastric cancer. These variations show considerable promise when used in combination with other procedures. Cytology is being evaluated as a screening test for cancer

of the genito-urinary tract, the rectum, and the colon. Also under study are applications of the cytologic examination to breast secretions and spinal fluid.

The value of vaginal cytology as a detector of early cervical cancer has been indicated in many clinical investigations. One of the most recent studies concerned more than 5000 women who received cytologic examinations by private physicians. The study reported that the examinations had revealed 48 definitely curable asymptomatic cervical cancers. The study also pointed out the economic feasibility of this screening procedure, estimating that its cost per private case is within the keeping of many other laboratory procedures.

Cytology provides, not only a means of detecting cervical cancer in its incipency, but also, material for study of the development of the disease. Research of this type is under way which may answer questions that bear directly on the problem of controlling uterine cancer. Questions are asked such as : Do the intraepithelial or "early" cancers progress invariably to invasiveness? How frequent is "early" cervical cancer? How many of these cancers regress spontaneously?

A number of studies seeking the answers to these questions have yielded significant preliminary findings. The University of Tennessee College of Medicine, with the support of the National Cancer Institute and other groups, is applying vaginal cytology in a mass-screening survey for uterine cancer and intraepithelial cancer among 165,000 women in Memphis and Shelby County, Tennessee.

The results obtained in the screening of the first 70,000 women are very encouraging. The cytology findings were suspicious or positive in 1327, or 1.9% of the women. Tissue biopsy studies have been completed in 1076 of the 1327 cases. The biopsy diagnoses were positive in 51% of the cases; borderline, suspicious, or inconclusive in 15%; and negative in 34%. Vaginal cytology resulted in false positives in only 369 cases, or 1/2% of the 70,000 women screened. From the point of view of cancer control, it is especially significant that 88% of the 282 confirmed cases of intraepithelial cancer of the cervix were unsuspected prior to cytology, and 29% of the 245 confirmed cases of invasive uterine cancer were unsuspected.

Also of particular interest is the age distribution of these cancers among the cases screened in the Memphis cytology study. On the average, the women with intraepithelial cancer are about 20 years younger than the women with invasive uterine cancer. The median age of the women with early cervical cancer is 33, while the median age of those with invasive cancer is 52. This suggests that preinvasive lesions are present for a long enough time to allow for their eradication.

The Memphis study was begun in July 1952. Cytologic examinations of the women will be repeated at yearly intervals, and the study will be

continued until the incidence of intraepithelial cancer and its relationship to the incidence of invasive uterine cancer are determined. (Science, 31 Dec., 1954; J. R. Heller, Jr., National Cancer Institute, U. S. P. H. S., Bethesda, Md.)

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Infectious Hepatitis in Pregnant Women

The purpose of this study was to investigate the immediate mortality of infectious hepatitis in pregnant women, and also to evaluate liver function a year or more after the acute episode in women who survived.

All cases diagnosed as nonobstructive jaundice at the Boston Lying-in Hospital in the past 18 years were reviewed in order to select patients for this study. No case occurring more recently than 12 months was included. Only patients who suffered an acute febrile illness clinically compatible with the disease, now called infectious hepatitis, were accepted in the study. In every case, obstructive jaundice had been ruled out and there was no evidence of toxemia of pregnancy. Seventeen patients were found who met these criteria; two of these had died of the acute disease.

Evidence indicates that pregnancy imposes a burden on the liver of the pregnant woman. If this is the case, an increased severity and mortality from liver disease, occurring during this period, could be expected.

Zondek and Bromberg, who followed a group of pregnant women in an epidemic of infectious hepatitis in Jerusalem, remarked on the increased mortality in pregnant women, (17% of 29 patients studied) but emphasized the role of malnutrition as a factor. In the reported series, 2 women died of acute yellow atrophy out of the 17 seen with infectious hepatitis during pregnancy. Malnutrition did not seem to be a factor in these deaths.

Because infectious hepatitis leads to chronic liver disease in some cases, and because pregnancy appears to place a load on the liver, the authors have attempted to determine whether infectious hepatitis, occurring in pregnancy, causes an increase in chronic liver disease.

The frequency of chronic liver disease after infectious hepatitis in nonpregnant patients is not clear. Jones states that chronic hepatic impairment evidenced by continued elevation of the serum bilirubin is not rare. Of 11 patients, 5 had a serum bilirubin higher than 1.0 mg. per 100 cc. An additional 3 showed elevation of serum globulin which in 2 cases was, perhaps, due to pregnancy; another demonstrated hepatosplenomegaly and a low serum albumin. Only 2 had entirely normal clinical and laboratory findings. The frequency of chronic hepatic disease in this series was, therefore, higher than one would expect after infectious hepatitis in nonpregnant patients according to the studies reviewed in the article.

Of particular interest is the fact that 15 of the 17 cases occurred in the last trimester of pregnancy. This weighting is corroborated by Zondek and Bromberg, who found 19 of the 29 patients in the second half of gestation, suggesting either that infectious hepatitis is more apt to be overt and clinically recognizable in the second half of pregnancy, or that pregnant women are more susceptible to infectious hepatitis in the latter months of pregnancy.

The results of this study are applicable only to infectious hepatitis occurring in the last trimester. The acute severity of the disease at that period of pregnancy has been emphasized by Zondek and Bromberg and Dill. It is also supported in this series in which the only deaths (two) occurred in the last trimester.

Emphasis was given to the fact that none of the patients under discussion had symptoms of liver disease at the time of follow-up examination. Thus, although the authors believe that persistent liver damage is frequent, it may not be progressive. They believe it possible that the abnormalities found are only indicative of damage incurred at the time of the infectious hepatitis. There is no evidence of a continuing process that will eventually lead to clinical disability, but avoidance of further liver damage in these patients is important.

This brief series of cases suggests that infectious hepatitis, when it occurs in the last trimester of pregnancy, carries a higher mortality and a greater tendency to chronic liver damage than when it occurs in the nonpregnant patient. (New England J. Med., 30 Dec., 1954; H. L. Frucht, M.D., Boston Lying-in Hospital, and J. Metcalfe, M.D., Harvard Medical School, Boston, Mass.)

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Infectious and Serum Hepatitis

During the period, 1951-1953, there were 6667 cases of infectious hepatitis and 137 cases of serum hepatitis among Navy and Marine Corps personnel. These diseases have been of primary interest in preventive medicine because their epidemiology is not clear cut. Recently, questions were being raised concerning the occurrence of these diseases (1) among personnel who have been in the Navy a comparatively short time and (2) by geographic area. This brief report attempts to shed some light on these questions.

From the numerical point of view, most of the cases of both infectious and serum hepatitis (more than 5 out of every 6) occurred among personnel with one year of service or more. An analysis of rates, by length of service, reveals that personnel with less than one year of service are less likely to contract these diseases than those with one year of service or more.

In the occurrence of infectious and serum hepatitis by geographic area, it was seen that, numerically speaking, during 1951-1953, almost half of the cases of infectious hepatitis occurred among personnel stationed aboard ships and about one-fifth among personnel in noncontinental shore activities. An inspection of the rates reveals the significance of these figures; it may be seen that, in relation to their strength, personnel aboard ship, and especially those stationed at shore-based activities in noncontinental areas, contracted these diseases much more often than did personnel in the continental United States. The distribution by geographic location is based on the individual's last duty station. Many individuals, whose last duty station was in continental United States, probably contracted infectious hepatitis in noncontinental areas. During the period under discussion, there have been very few instances of any concentration of hepatitis cases at one activity.

During 1951-1953, only 15% of the serum-hepatitis cases occurred among personnel in noncontinental shore stations. Continental United States shore stations and ships each accounted for more than 40% of the new cases. Relating these cases to strengths in the respective areas to obtain rates, gives a picture of the relative incidence among personnel in these areas. Although the differences in the incidence rates for serum hepatitis in the three areas are not as great as for infectious hepatitis, nevertheless, the one outstanding fact remains that the hazard of contracting serum hepatitis is greatest among personnel attached to noncontinental shore stations. (Statistics of Navy Medicine, Jan., 1955)

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Management of the Tuberculous Hip Joint

A steady, although gradual improvement in treatment of the tuberculous hip joint has been observed, and more satisfactory results have been obtained. The crowning achievement in treating tuberculosis has been the introduction of antibiotics.

One of the chief difficulties at present in patients with hip-joint disease is the accurate diagnosis of the early case. Frequently, a patient is seen with the clinical signs of arthritis of the hip or, as it is called, transient arthritis (an "observation hip"), with a limp, limitation of movement by muscle spasm, and perhaps, pain. The history is usually of a few days' duration with little evidence of a systemic illness--although there may be a mild pyrexia--and a "reported normal" roentgenographic appearance of the joint.

Accurate diagnosis in such a patient is so important that every possible means of diagnosis must be employed, as the prognosis has been so immeasurably improved by the introduction of chemotherapy. It is

now known that there is a reasonable chance of obtaining a mobile joint if the disease is recognized in its early synovial stage; early proof of the lesion is, therefore, imperative.

However, it is obvious that the diagnosis of a transitory arthritis from a tuberculous lesion is most difficult. Historically and symptomatically, these are often identical and remain so for weeks during the early treatment which is usually by means of traction for the relief of pain and resulting spasm.

Statements are glibly made of doing a biopsy, of culture, and of guinea-pig inoculation, as though these gave an absolute diagnosis; but, unfortunately, this is not always so. The author believes that, in a few cases, because of the absence of confirmatory evidence of this nature, reliance must be placed on a summation of all facts which can be interpreted by using clinical judgment based upon experience--surgical acumen.

In any consideration of the treatment of the tuberculous hip joint, it is obvious that chemotherapy has allowed the return to the more radical methods of local attack, some of which in years gone by were disappointing because they were so often followed by sinus formation and dissemination of the disease. However, it should always be borne in mind that tuberculosis is a general disease and that the joint lesion is but a metastatic manifestation of it. Thus, the involvement of the deeply situated glands, inaccessible, insidious, and in issue far more dangerous than the lesion itself, should ever be borne in mind. This makes the sanatorium regimen still imperative.

Children responded well to this regimen, with healing of the adenitis as well as of the concomitant bone lesion, but this took a long time. Many patients required sanatorium treatment for 5 years or more in the days before the introduction of chemotherapy. This period of prolonged immobilization led to many complications, such as premature fusion of the epiphyses, with shortening of the extremities and resultant stunting, both physical and mental, as well as other forms of morbidity.

The author noted that adults did not respond so well and often had reactivation of the glandular focus with a substantial late mortality from associated lesions.

Streptomycin and associated drugs have permitted a direct surgical attack on the joint; in patients seen early, therefore, there is hope for a mobile joint, and in patients seen late, a shorter period of immobilization, an earlier and quicker fusion, and fewer, if any, complications.

Undoubtedly, the best results are now obtained by the use of streptomycin in combination with other drugs and surgery. These do not supersede a sanatorium regimen, but merely reduce the time in which it is necessary.

In Scotland, the author believes that perhaps there is more optimism than in America about the future of skeletal tuberculosis now that

antibiotics are available. Streptomycin, augmented by para-aminosalicylic acid, or substituted for by isonicotinic acid hydrazide (isoniazid), gives the orthopedic surgeon a far greater control of the course of the disease at any stage.

Chemotherapy for the *Mycobacterium tuberculosis* has been long enough in general use for its acceptance as the most useful adjunct to surgery, the principles of which, in turn, must be modified and advanced so that its properties are fully utilized in the treatment of incapacitating condition. Antibiotics may be expected to shorten the course of the disease. Rigid immobilization for a long time is probably no longer essential, and it is hoped that the unfortunate effects of immobilization, such as renal calculi, osteoporosis, and premature epiphyseal closure, leading to a woefully short extremity, will also become things of the past. The author fully expects that the bacteriologist and the biochemist will produce other chemotherapeutic agents of greater bacteriostatic and penetrating properties, and that surgical treatment will correspondingly advance, resulting in more mobile hips. There will, however, often be some derangement in the usual architecture of the surfaces of this weight-bearing joint, because most tuberculous lesions heal by fibrous tissue or recalcification, without regeneration of the original tissues. The complication of osteoarthritis is thus likely to arise with its own peculiar difficulties in treatment, and arthroplasties will have to be carried out at a later stage of life. Most orthopedic surgeons will be ready and pleased to treat this complication when it arises, after the patient has had the use of a functioning hip joint for several years.

To achieve bony ankylosis of a tuberculous hip joint (particularly in the advanced intra-osseous type of lesion) must be the aim and method of choice because of its long proved efficacy. However, the author suggests that now, more than ever, early diagnosis of the lesion by biopsy must be sought (with its concomitant decompression of the tuberculous lesion of the hip joint) so that the patient is left with a functioning and mobile hip. (J. Bone & Joint Surg., Dec., 1954; Prof. W. Mercer, Edinburgh, Scotland)

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Surgical Treatment of Polycystic Kidney

Because one learns by iteration and reiteration, it is important to repeat as often as possible that destructive polycystic disease of the kidney must be diagnosed early in its course, and that many patients treated for Bright's disease, associated with hypertension and uremia, are actually suffering from polycystic disease. The usual bilateral nature of the disease challenges the surgeon's ingenuity, and no other operation on the

kidney requires greater deliberation and keener judgment than does surgical treatment of this condition.

With modern diagnostic methods--excretory and retrograde pyelographic and arteriographic studies and perirenal insufflation--the condition can be recognized in most cases. The diagnosis and treatment of concomitant ureteral stricture preserve kidney tissue and prolong life.

Some relevant characteristics of polycystic disease, its complications and the indications for conservative operation for relief of intrarenal tension and intractable pain, as well as those for radical intervention (nephrectomy), are presented in this article, and a case of polycystic kidney disease and cholesteatoma, treated by nephrectomy, is reported. Although polycystic kidney disease is usually bilateral, some maintain that it may be unilateral.

Associated congenital anomalies are fairly common: harelip, supernumerary fingers or toes, club feet, intracranial aneurysms and others; in 40% of all cases, cysts of the liver, uterus, spleen, and other organs are also present. Congenital malformation of the polycystic kidney itself is relatively rare.

Other conditions may coexist with the polycystic disease--ptosis, torsion, calculi, and hydronephrosis are among them. When torsion is present, it is well to carry out nephropexy. The case of a patient is reported in which intractable pain was relieved by nephropexy and sympathectomy, and by decapping, puncture, and cauterization of numerous cysts in the kidney and liver. Kidney stones are removed in the usual manner. It is better to remove stones situated low in the ureter by ureterolithotomy than to risk cystoscopic manipulation. Plastic operations for hydronephrosis are performed as in cases without polycystic disease.

In addition to impairment of renal function, two conditions that arise from the disease are pain due to enlargement of the cysts, and back pressure due to ureteral stricture. Ureteral drainage should be included in the over-all treatment of this progressively destructive disease. Medical treatment is confined to dealing with the concomitant conditions--pain, complications of stricture--and perhaps hormonal therapy.

Because of the customary bilaterality of this disease, conservative surgical treatment is preferable unless circumstances make more radical treatment necessary. Progressive enlargement of the cysts increases intrarenal pressure and causes destruction of renal parenchyma. In order to arrest this pathologic process, Rovsing devised his multiple puncture operation. It is generally agreed that the indications for this operation are: (1) diminution of renal function, recognized in gradual rise in blood chemical values and decrease in renal excretion of urine; (2) persistent pain; (3) intracystic hemorrhage; (4) progressive elevation of blood pressure; (5) limited renal involvement, and (6) poor results of medical treatment.

The permanent therapeutic value of decapping and puncturing cysts has been questioned because some cysts may refill and unpunctured cysts progressively enlarge. Secondary infection and urinary fistula can be prevented by proper technique. It is the consensus that, if patients are carefully chosen and operation is performed early enough in the course of the disease, the patient's life is unquestionably prolonged.

In the presence of accompanying destructive diseases localized to either pole of the kidney, one should not hesitate to carry out partial resection, and for bifid kidney, heminephrectomy.

The surgeon is loath to carry out nephrectomy for this disease but he should not hesitate to operate for definite destructive lesions of the kidney. Operation is contraindicated if renal function is too poor, a status usually reflected in a nonprotein nitrogen level of over 60 mg. per hundred milliliters of blood. Indications for nephrectomy are cancer, caseocavernous tuberculosis, pyonephrosis, irreversible extensive hydronephrosis, intractable diffuse pyelonephritis, voluminous and numerous calculi and exsanguinating hemorrhage. After unilateral conservative or radical operation, the remaining kidney may decrease in size.

Nauman and Sabatine reported a case of cholesteatoma of the kidney. Although this tumor commonly occurs in the brain and occasionally in other parts of the body (intestinal tract, genitalia, eyes, and elsewhere), their review of the literature revealed only 8 authentic cases of cholesteatoma of the urinary tract, none accompanied by polycystic kidney disease.

The first case of cholesteatoma complicating polycystic disease of the kidney is reported. This condition was treated by nephrectomy and, thereafter, by repeated dilation of the remaining ureter. The patient was well two years and five months after the operation. (J. Internat. Coll. Surgeons, Dec., 1954; C. P. Mathé, M. D., San Francisco, Calif.)

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The Painful and Stiff Shoulder

For many years, confusion and disagreement have existed with regard to the pathologic character and the treatment of a painful, stiff shoulder. The syndrome of severe progressive pain in the shoulder in a person of middle or advanced age, which progresses in spite of recommended forms of treatment, is a frequent and annoying problem. The multiplicity of different treatments recommended in the literature indicates that no treatment has been satisfactory. There is almost total ignorance of the pathogenesis, as well as minimal information as to the pathologic picture, and consequently, the diagnosis is difficult. Finally, writers on the subject are at variance as to what constitutes a satisfactory result.

The purpose of this article is to attempt to review and coordinate the experience of all writers and evolve a logical plan of treatment. A proposition is made to standardize the results, so that proper evaluation of the treatment can be obtained.

A thorough examination of the shoulder, with attention directed to the following points, is a prerequisite to determining the type of treatment to be given. The first point of tenderness is above the greater tuberosity and just adjacent to it. When the trouble is limited to this region, the patient may shrug the shoulder on attempting abduction and point to this spot as the site of discomfort. Alternately, at the same examination, the shoulder movement may be performed freely, without any discomfort. This is indisputable evidence that the disturbance in the mechanism of abduction is a factor in producing or exciting the reaction around the cuff of the humeral head. Whether the disturbance of the mechanism is primary or secondary to a lesion or an inflammatory process in the cuff at this region, remains to be studied. When the condition is slightly more advanced, tenderness is demonstrable along the bicipital groove. The various tendon signs described by other authors, including Yergason, may be demonstrable.

Active abduction and forward flexion are next tested. Both of these motions are done, first with the arm in internal, and next in external rotation. The rotation of the humeral head may bring the tender lesion around to the point of greatest compression and will bring out the discomfort and shrugging mechanism that might not be demonstrable in other phases of the arc of rotation. Passive motion is next tested and compared with active motion. As a general rule, in the late stages of frozen shoulder, the passive motion does not differ greatly from the active. This is in contrast with the condition observed in the early, nonadhesive stage, in which the passive motion greatly exceeds the active and may even possess a full range.

Next, a local anesthetic is injected into the tender area to remove the possibility that pain will restrict the range because of the setting up of muscle spasm, and the ranges of active and passive motion are once again determined. If a full range of active motion is obtained, the condition may be considered in a very early stage and without adhesions. If, on the other hand, restriction is marked, and is comparable to the range observed before anesthetization, the presence of adhesions and classification of the lesion as a late one are definite. If good abduction is obtained actively, attempts to maintain the position against resistance may demonstrate that the arm is weak and may drop to the side. This strongly suggests that the maintenance and fixation of the head in the glenoid is not obtainable because of interruption of the musculotendinous cuff.

Roentgen films are taken. In the typical frozen shoulder, the humeral head is very high in the glenoid and the upper edge of the head is superimposed upon the acromion. If downward traction is exerted on the extremity

or if the biceps flexion is strong and exerted against resistance, the humeral head should normally descend and the humero-acromial space should widen. Failure to demonstrate a difference from the previous film indicates that the capsule is markedly contracted, and adhesions and fixation are extreme. The greater tuberosity may demonstrate reduction in size (recession), and there may be sclerotic and irregular changes at the point of attachment of the cuff. This indicates long-continued friction and irritation of the area. The area just proximal to this tuberosity is the trigger point that sets up the vicious cycle. These observations about the tuberosity are obtainable in practically all cases of frozen shoulder. They are pathognomonic of long-continued compression and irritation where the tuberosity comes in contact with the acromion.

Conservative treatment is the *modus operandi* in all cases. The patient is placed in absolute bed rest with the arm hanging in a dependent position, or traction is exerted distally to eliminate the humero-acromial compression. A few patients gain a great deal of comfort by placing the arm in wide abduction so that the tuberosity has passed beyond the acromion and lies medially in an area of relatively little compression. This is effective only in the early stages. Ice packs are applied for prolonged periods for their anesthetic effect and for the reduction of congestion. Sedatives are given until the pain subsides completely. Almost complete elimination of discomfort may take from one to six weeks. This is followed by exercises designed to strengthen the biceps muscle without permitting abduction. The increased tonicity of the biceps muscle, theoretically, is effective in creating a depressor effect on the humeral head. Pendulum exercises, to stretch the capsule and create enough redundancy inferiorly to permit downward descent of the head during abduction, are started. Next, graded active and passive abduction exercises are instituted. The abductors are stretched. The arm is maintained in neutral rotation. After over 90% abduction is obtained, external and internal rotation stretching and exercises are done. By directing the patient to use a bath towel in the same manner as in drying the back after a bath, one has an effective means of combining active and passive exercises in internal and external rotation at home. The patient is also instructed to attach a pulley very high on a door, and by means of a clothesline, which is held by the ends, alternately to raise and lower the affected extremity. This is an effective passive exercise to increase the range of motion in the shoulder and to stretch the inferior capsule and the abductor muscles. Wall-climbing exercises are also done.

The indications for arthrotomy are definite. They are (1) failure to respond to conservative treatment as regards both motion and pain; (2) too slow an improvement, economically undesirable; (3) recurrence; and (4) suspected gross damage to the cuff, tendon, and bony structures. (J. Internat. Coll. Surgeons, Dec., 1954; S. L. Turek, M. D., Mt. Sinai Hospital, Chicago, Ill.)

Public Health Aspects of Periodontics

The widened scope of modern dentistry presupposes a concern, not only with restoration of lost tooth structure, but also with care of the supporting tissues of the teeth and the oral mucosa in both health and disease. The inter-relationships of medical and dental diseases demand of the dentist much basic knowledge of disease processes. Of special importance is the role of periodontics in dentistry, because periodontics is that specialty of dental science which is concerned with the study, prevention, and treatment of diseases of the supporting tissues of the teeth. Specialty status is accorded periodontics because it is a well organized body of knowledge and requires a high degree of skill in performance.

The prevalence of dental diseases is further complicated by the insufficiency of personnel to render adequate care to all of the public. The time needed for dental treatment, and the necessity for periodic repetition of dental care throughout life, are added difficulties which need to be overcome.

Periodontal disease is a chronic ailment. That some form of periodontal disease affects the community as a whole is a fact which has been revealed by clinical observation and epidemiological studies--inadequate as many of these may have been. Probably more than any form of dental disease, periodontal disease may and does have injurious effects in other remote areas of the body. Opinions are prevalent that periodontal disease possibly initiates, and probably aggravates, some systemic diseases. The mouth is the body's major avenue of entrance for bacteria. As a matter of fact, the likelihood of protection of bacteria in periodontal pockets is very great indeed.

Periodontal diagnosis embraces those clinical and laboratory procedures necessary to disclose the distinctive nature of the disease by its symptoms. The symptoms which a disease process presents are actual clues which the diagnostician must use in piecing together the whole story.

The duty of dentists to examine carefully the entire mouth of each patient is by no means idealistic; to look at the teeth only is no longer sufficient.

Upon the dentist's recognition of incipient carcinoma or venereal diseases or metabolic disturbances depends the immediate referral to a source of corrective therapy. The consequences of delayed, inadequate diagnosis are the uninterrupted progression of cellular growth, tissue destruction, systemic invasion, and ultimate death. The spread of many infectious diseases, if the latter are recognized or properly diagnosed by any member of the health team, could be reduced significantly. Just how important these observations are to the periodontist is readily recognized when it is understood that, perhaps more than any other dental specialty which contributes to complete oral rehabilitation, periodontics is intimately

associated with preventive dentistry, wholly dependent upon oral diagnosis, and vitally concerned with dental therapeutics. As important units of the health team, periodontists in particular, and dentists in general, must look beyond the teeth if they are to assume the full responsibilities and obligations of public health to which they are committed by their own pledge of honesty and fairness to patients.

As complicated as are the relationships of systemic factors to the etiology of periodontal disease, and as few as have been the clinical and laboratory investigations under controlled conditions to determine the nature of these relationships, it can hardly be denied that systemic factors do influence the health of the periodontal tissues and the course of periodontal disease.

Calculus, oral habits, mouth breathing, inadequate interproximal contact, irritating effects of poor restorations, malposition of teeth, and occlusal trauma represent some of the local etiologic factors of periodontal disease. Their correction and the reinstitution of normal physiologic appearance and function of the periodontium are the ultimate objectives of therapy. However, the attainment of these objectives is frequently a difficult procedure because many factors are involved. Many of these factors are not too well understood so that it is necessary for the periodontist to use much ingenuity in evaluating therapeutic procedures and arriving at a plan of operation for a particular case. The indications and contraindications for such procedures as subgingival curettage and gingivectomy, splinting, tooth replacement, drugs, occlusal adjustments, orthodontic procedures, diet therapy, and oral hygiene are dependent upon the characteristics of each patient.

The treatment of some types of periodontal disease is, therefore, a technical function of the specific dentist, whether general practitioner or specialist. There can be no mass application of technical procedures in periodontal therapeutics. The unit of operation is a single person necessitating individuality of treatment by a particular clinician. The epidemiologist considers the community as the unit of operation.

The metabolic activity of the cellular elements in the periodontal tissues influences the reaction of the latter to irritative stimuli. It is, therefore, most necessary to have an efficient performance of this activity. The necessary nutrients assist in maintaining optimum activity so that proper foods with a sufficiency of vitamins and minerals are indispensable.

Dietary regimen, role of endocrines, debilitating diseases, oral hygiene, the effects of chemical irritants, home care, and the role of smoking in ulceromembranous gingivitis are factors which lend themselves to the public health educational approach. In a very real sense, their correction can be developed as an educational responsibility, requiring community-wide health educational effort.

People are entitled to the benefits of preventive dentistry as an essential of over-all preventive medical care. The prevention of periodontal

disease, together with the maintenance of health of the periodontal tissues, are the two most important areas of periodontics with public health implications.

To be effective, a program of prevention must be based upon a thorough knowledge of causative factors and epidemiological characteristics. A recapitulation of the local and systemic etiological factors in periodontal disease indicates that whosoever is responsible for care and maintenance must be thoroughly versed in recognizing, not only the conditions themselves, but also the factors which predispose to periodontal disease. Education, therefore, looms as the major consideration. Certainly, periodontists must be especially trained, but it is just as important that other dentists, dental hygienists, physicians, and nurses should be educated about care and prevention of periodontal disease. They must be taught that the instructional status of the individual is an important predisposing factor of periodontal disease.

Health workers must foster periodic dental examinations. Moreover, they must be taught why it is essential to emphasize home care. Health workers must then play a major role in seeing that this information is passed on to the public. (J. Dent. Med., Jan., 1955; C. O. Dummett, D. D. S., VA Hospital, Tuskegee, Ala.)

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Radioactive Isotopes

Radioactive isotopes are chemically identical with their stable counterparts. They behave in the same way in chemical reactions, and are handled in the same manner by physiologic and metabolic processes. However, their atoms possess the unique property of disintegrating, and emitting radiation in the act, which makes it possible to follow them through all sorts of procedures and reactions. In following them, it is also possible to trace the paths of their nonradioactive twins.

The rate of disintegration of these substances is commonly expressed by a statement of their half lives. The half life is the period in which half of all the atoms of the particular isotope present will have disintegrated; in the next half period half the remainder will go, and so on. Thus, about seven half lives are necessary to reduce any given amount of an isotope to one percent of its initial value. Half lives of various isotopes range from fractions of a second to millions of years; for those useful in medicine, for the most part, half lives vary between a few hours and a few weeks. Radioactive potassium (K^{42}) has a half life of 12.4 hours; its period for reduction to one percent is about 3.5 days. Radioactive phosphorus (P^{32}), with a half life of 14.3 days, will not be reduced to one percent until over three months have elapsed.

The amount of any radioactive isotope is expressed in terms of curies, or millicuries, or microcuries, the last being the normal one for diagnostic procedures. A microcurie of any isotope is that quantity in which 37,000 atoms disintegrate per second. If an isotope has a long half life, a microcurie of it will have to contain more atoms than if it has a short one, to keep up the supply for disintegration. As the amount decreases by this disintegration, what was originally a microcurie becomes less, but the reservoir has to keep up the supply for whatever the natural rate may be.

Radioactive isotopes emit beta or gamma radiation, or both. The beta rays may be so unpenetrating that a small fraction of a millimeter of tissue will stop them all, as in radioactive carbon and sulfur, or they may traverse several millimeters, as those from radioactive phosphorus do. The most penetrating beta rays, known to be emitted by a radioactive isotope with a half life of more than a few minutes, are those from radioactive potassium, with a maximum range in tissue of nearly 2 cm. Gamma-ray energies range from less than 100 kv. in radioactive iron, to more than 2,000,000 volts in radioactive sodium.

It is evident that both the lifetime and the kind of radiation emitted by an isotope will be important considerations in the types of investigation that can be made with it. Obviously, a study extending over several days cannot be made with an isotope having a half life of a few minutes.

Two other limitations exist on tests to be performed with radioactive isotopes; these may be called the avoidance of chemical effect and avoidance of radiation effect. Chemical effect would never result if carrier-free isotopes were used.

Radiation effect would result if the radiation emitted by the test dose of the radioactive material were sufficient to bring about physiologic changes that might affect the reaction being tested. This will seldom, if ever, occur in the human being at present. Most test doses are planned to deliver not more than 0.3 r to the patient in the first week, and less in any subsequent week; this is assumed to be the permissible dose that will have no detectable effects.

Various types of studies with radioactive isotopes are useful as diagnostic aids. This is a different thing from saying that they are "diagnostic tests." Actually, there are, in medical practice, very few truly diagnostic tests that reveal that the patient does or does not have a certain disease or condition. The Wassermann and Aschheim-Zondek are two that come immediately to mind. At present, no test with an isotope is in this class, although some of them may be before long.

The biologic or physical studies that can be made with radioactive isotopes cover a wide range of phenomena, such as uptake, distribution and excretion of an element, turnover rates in particular tissues, and the nature of the products of intermediary metabolism, which as yet have

little or no direct significance as diagnostic aids. However, most of the studies now used clinically started as pieces of physiologic research. It is probable that others will cross the line from the purely investigative to the practical.

Useful studies as aids in medical procedures are based on one of four phenomena: (1) dilution of a known amount of isotope to determine the volume of the diluting fluid; (2) rate of transfer from one part of the vascular system to another to ascertain some fact about the circulation; (3) rate of disappearance of an isotope that has been injected directly into a certain tissue, to reveal the state of the local circulation in that tissue; and (4) concentration of the isotope in a particular organ or tissue to determine something about the local function of that tissue.

Examples of dilution studies are determinations of the volume of blood, plasma, red cells, and extracellular fluid. The basic procedure is the same in all cases. A known amount of the isotope to be used is injected into the circulation. After an appropriate time for mixing into the fluid studied, a blood sample is taken and the dilution determined.

Studies based on rate of transfer are fundamentally illustrated by the determination of circulation time. An isotope can be injected into a definite place in the vascular system, rapidly and in a small volume of solution; its arrival at another place is observed by a detector located there. Time elapsed between injection and detection is circulation time between the two points.

Studies of rate of disappearance of isotope from a tissue offer a different index of circulation--one dealing with the actual nourishment of a small fragment of tissue under observation. The isotope, in a very small volume, is injected directly into the tissue under investigation, the counter placed directly over it, and the disappearance rate observed. This procedure is of value in tests of circulation in tubed pedicles used in grafts in plastic surgery.

Concentration of an isotope in a particular tissue, for study of some function of that tissue, is best typified by studies of thyroid function with radioactive iodine.

It has always been hoped that radioactive tracers could be found that would definitely identify cancerous tissue. Unfortunately, up to the present time, this hope has not been borne out. However, it is true that any tissue that is metabolizing rapidly will show earlier or higher uptake of any metabolite than corresponding normal tissue. This phenomenon has been utilized in the attempt to localize tumors not readily demonstrable otherwise.

Most popular of these has been the localization of brain tumors. The surgeon is anxious for help of this sort. In general, the blood-brain barrier inhibits the rapid entrance of nonphysiologic material into the central-nervous-system tissues. However, in the presence of inflammation

or of a neoplastic growth, this barrier (whose exact nature is unknown) is disrupted and allows the tracer to flood the region. The mechanism whereby more of the isotope is concentrated in the tumor than in the normal tissue is not known but the concentration does occur. Localization, then, depends on counting at symmetrically located sites on both sides of the head, and finding where there are differences in level. At present the tracer of choice is radioactive iodinated human serum albumin which gives rather high differentials with tissue levels remaining stable for two or three days. Very small tumors and midline tumors are not readily located but some clinical groups report a high percentage of successes in large series of cases.

Recently, procedures have been developed to detect silent metastases in the liver, which are among the chief causes of failure in surgical treatment of cancer. The various liver-function tests and needle biopsy are the only laboratory procedures currently available to the clinician for the detection of such metastases, and they are notoriously unreliable when one is dealing with small, solitary or early growths. However, these are frequently demonstrated by administration of a radioactive tracer and counting of points in a pattern over the region. The tracer employed by the group at the Los Angeles Veterans Administration Hospital, who first reported on this procedure, is iodine-labeled human serum albumin. The tracer dose is administered intravenously and the patient studied 24 hours later. Counting over a 5 cm. -square lattice pattern is sufficient to show regions of increased uptake. Very small or deep-seated masses may be masked by normal liver. Nevertheless, in a series of 151 patients studied by the group, an over-all accuracy of 95% was obtained. In 32 patients found at operation to have metastases, 30 had previously been designated as positive by radioactive survey. Of 119 grossly normal, 114 had been within the control range for the isotope test. Because preoperative knowledge of the existence of liver metastases would be extremely valuable, it appears that this test should have wide use.

Efforts have been made to find a bone-seeking isotope that could be used as a detector of bone metastases. Some success has been achieved with radioactive gallium; however, this isotope also shows deposits in arthritic areas. In general, these metastases can be found by means of x-ray examination as soon as by an isotope tracer. (New England J. Med., 6 Jan., 1955; E. H. Quimby, Sc.D., Columbia University College of Physicians and Surgeons, New York City)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Safe Practices for Navy Motor Vehicle Operators

The following material on Safe Practices includes many instances in which the practice you are advised to follow may differ from what you are used to doing. These safe practices are based on the experience of persons who have made a special study of how to drive safely and efficiently. These practices are now being taught to nearly half a million beginning drivers each year through programs of driver education.

Read this material with an open mind. The chances are that you learned to drive in a haphazard way, possibly from someone who passed on to you his own questionable methods. Therefore, you can improve your present practices by close study of the following section. Be honest with yourself; if you don't use the practices outlined here, your driving needs to be improved.

Safe Driving Practices

1. Entering a through street or highway.

As you start out on any trip you usually enter a through street or highway from a driveway or minor side road. At such locations you can avoid trouble by slowing down enough to look for approaching cars from both directions. If there is a stop sign, stop completely before looking for approaching cars.

It's up to you to give the right-of-way to all traffic on a through street or highway. Wait for a gap in traffic before entering a throughway.

2. Turning corners.

(a) To the right--Before you turn to the right, move into the right-hand lane, check your mirror for traffic behind, and signal your intention of making a right turn, making sure that other drivers see and know what you're going to do. Slow down before making the turn. Just before turning, check traffic coming from your left.

Turn the corner at a speed that will keep you on your own side of the street--and in your own lane. After completing the turn, check your mirror. Get into the habit of checking your mirror after every turn. Keep yourself "in the know" as to traffic behind and how close it is to you.

(b) To the left--When you want to turn left, move into the center lane or the far left lane on one-way streets, check your mirror, and signal your intention of turning. Watch for a gap in the traffic coming from the opposite direction. Time your arrival at the turning point to take advantage of this gap. By proper timing you can often avoid a complete stop.

Slow down before starting the turn. Just before turning, check traffic coming from your right.

Turn the corner at a speed that will keep you on your own side of the street and in your own lane. Avoid cutting corners when making left turns. After completing the turn, check your mirror again.

(c) U-turning- If you have to reverse direction, try to do so in an off-street space. Next best is to go around the block. If you make a U-turn, stop first near the right-hand curb and look carefully in all directions for gaps in traffic. If the street is too narrow to permit a U-turn, stop and back into a driveway on the right-hand side of the street. It's always better to back off the street and head out into traffic than to head into a driveway and back out into traffic.

3. Stopping.

When driving in high gear, use your brakes first. After slowing down to about 10 miles per hour, press down the clutch pedal. Leave the gear shift lever alone until your car has stopped.

By "playing" the traffic lights and watching what's happening ahead, you can avoid many stops every day. Keep your attention on developments ahead, and plan your speed so that you will not have to stop often. You'll save car, brakes, and nerves by so doing. By all means, avoid quick stops, especially when the road surface is slippery.

4. Parking.

When parking on the street, be sure you are far enough away from driveways, fireplugs, corners, and alleys. If you have to back into a parking space, do it slowly and be sure the way is clear behind you. Backing accidents are of the most common types of accidents with trucks. If you park on a hill, set the front wheels against the curb so that your vehicle cannot roll away by itself.

5. Sharing the road.

You can avoid a lot of trouble in driving by sharing the road with other vehicles. Be aware of the position of your own vehicle in relation to other traffic, especially in streets without marked lanes. Avoid crowding other vehicles at any time. Check your mirror frequently so that you know when a car behind you is about to do something which will affect you.

The vehicle you drive may be marked U. S. N. ; if not, then because of your uniform other drivers know whom you represent even if they don't know you personally. Share the road with others--and avoid trouble.

6. Overtaking and passing.

The common practice is to overtake and pass other vehicles on the left. Before you pass another vehicle, make sure you have enough room to complete the pass without interference from oncoming traffic. If there is enough time to pass, check behind to see whether someone else is about to pass you.

After you have passed the vehicle, check your mirror before pulling over to the right-hand lane. You should be far enough ahead of the vehicle

to see the corner of it in your mirror before returning to your proper lane. Remember, there's a penalty for "clipping".

In the daytime, sound your horn as you pull out to pass. At night, flick your headlights twice as additional warning to the driver ahead that you intend to pass him. If you're the one that's being passed, you should depress your headlight beam to signal the driver passing you that he has cleared and can safely return to the right lane--and of course to reduce the glare in his rear view mirror.

In cities it's customary to pass other vehicles on the right if they are slowing down or are stopped to turn left at an intersection. On one-way streets, pass other vehicles on either the right or left side, after first making sure no one from behind wants to pass you and that the driver ahead knows you're intending to pass him.

7. Right-of-way at intersections.

You have heard numerous rules about who has the right-of-way at intersections. Regardless of where you drive, your job is to drive so that you neither hit nor get hit by another vehicle at any intersection.

Even though the law says that you should yield the right-of-way to vehicles approaching from your right, don't forget that the best practice in checking an intersection for cross traffic is to look first to the left and then to the right and then give the right-of-way to any fool who wants it!!!

Collisions are not avoided by drivers who try to apply the fine points of right-of-way rules after entering an intersection. If you can't stop in time, the other fellow may not be able to stop either. Depend on yourself, not the other fellow, to avoid collisions at intersections.

8. Keeping far enough behind other vehicles.

The frequency of rear-end "chain-type" collisions, where each of several vehicles in line plows into the rear of the one ahead, shows that many drivers follow too closely. Regardless of what the driver ahead may do, it's your job to be able to stop without crashing into the rear end of his vehicle.

The best way to avoid rear-enders is to stay behind the vehicle ahead a distance equal in feet to twice your speedometer reading in miles per hour. For example--at 20 miles per hour, follow no closer than 40 feet; at 30 miles per hour, the following distance should be not less than 60 feet. Figure out the minimum distance for other speeds.

9. Night driving.

Lack of clear visibility makes your job more difficult at night--as it does for all drivers. You can compensate for this condition by adjusting your speed and following distances to what you can actually see.

Modern sealed-beam headlights do a good job of illuminating roadway conditions ahead for approximately 200 feet. Traveling at 50 miles per hour you need more than 200 feet to bring your car to a complete stop. Exceeding 50 miles per hour at night means "over-driving" your headlights.

When meeting other cars at night, depress your headlight beam until you have passed by the other vehicle. If the other driver does not depress his headlights for you, don't smash him in the eyes with your upper beam, because, in effect, you've got two blind men driving towards each other then. Take care of yourself by realizing that you will not see conditions ahead quite as clearly for several seconds afterward, until you are over the effects of glare from his headlights. Also, depress your headlights when following another vehicle. It will reduce the reflection the driver ahead gets from his mirrors.

Headlights have still other uses. Professional drivers use them to signal each other as they meet on roads. One blink is a friendly greeting; two means trouble ahead, such as a traffic cop, minor accident, a detour, et cetera; three or more blinks of the headlights mean serious trouble ahead, such as a major accident, children or animals on the road, a bridge out, et cetera. The driver so warned regulates his speed and alertness accordingly. If a Navy driver began using these signals to help his buddies as they meet on the road, many accidents could be averted.

10. Hazardous driving conditions.

When unusual conditions arise, follow these sound practices and avoid trouble:

(a) If you have to park along the highway for an emergency, pull off the pavement if at all possible. Otherwise, use flags or flares to warn other drivers that your vehicle is parked on the road. Carry a couple of empty quart milk cartons in your trunk (the waxed type); they make excellent flares.

(b) To avoid skids in starting, turning, or stopping on slippery road surfaces, make easy starts and stops, and slow down before turning.

(c) When fog or smoke cuts down visibility, reduce your speed and keep it reduced until you are in the clear again.

(d) If your right wheels slip off the pavement, ride the shoulder until you can slow down. Then pick a spot where the shoulder level is even with the pavement level to swing back onto the paved surface.

(e) Rough roads and gravel roads call for slower speeds. Your tires have less traction on such roads, which means you have to start, turn, and stop more slowly.

11. Pedestrians and bike riders.

Take it easy when you see people walking along the road, and when you see children riding bicycles. They can get in your way unexpectedly,

and often they cannot move out of your way fast enough. You have to judge each situation for yourself; but be sure to allow an extra margin for the mistakes of pedestrians and bike riders.

12. Competent driving.

When you drive like a real expert, people can see the difference. Among the ways they spot you as an expert driver are the following:

- (a) You have a business-like and alert posture at the wheel.
- (b) You handle the car controls easily and smoothly.
- (c) You use the brakes infrequently because you "play" the traffic lights, keep a safe distance from the vehicle ahead, and act in advance on all the clues that show you what others are likely to do.
- (d) You are constantly aware of the position of your own car in relation to other traffic, especially on streets without marked lanes. You check your mirrors frequently so that you know how things are going behind you. Other drivers rarely blow their horns at you because you stay where you belong.
- (e) You time your arrival at intersections and other locations where you cross or merge with other traffic so as to fit in where the traffic gaps occur. This makes it easy and smooth for you and others to keep moving.
- (f) You position your vehicle in the correct lane in advance of all right and left turns. Doing this along with signaling for your turns keeps everyone informed as to what you intend to do.
- (g) You stay far enough behind other vehicles at all times.
- (h) You never make emergency stops (an emergency stop is the next thing to a collision, and indicates you were not completely "on the ball").
- (i) Your vehicle, month in and month out, continues to look like one that is driven by an expert.

13. In closing, although time and money do not allow for a great deal of driver improvement training, the men and women of the Navy can accomplish self-improvement in highway safety by applying the rules just listed. Remember--in or out of your Navy uniform, you are convinced that only one thing saves--SAFE DRIVING PRACTICES. (Naval Training Bulletin, Nov., 1954)

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Medical Care of Atomic Casualties

The Army Medical Corps is presenting courses on the "Medical Care of Atomic Casualties" at the Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D.C. The Army is planning to have eventually all its medical officers attend this course, the early courses being given to the senior medical officers. Five quotas have been

allotted to the Medical Department of the Navy and the Bureau of Medicine and Surgery would like to have as many medical officers as possible, especially those in command or planning positions, take this course.

All expenses incident to attending this course will be borne by the Bureau of Medicine and Surgery.

The next course is scheduled for 7-16 March 1955, inclusive.

Applications for this course should be addressed to: Bureau of Medicine and Surgery, Attention: Training Division; and should be submitted in time to arrive at the Bureau by 18 February 1955.

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Medical Deep Sea Diving and Submarine Medicine Technicians

It is desired that all Medical Department officers advise Group X hospital corpsmen of the acute need for volunteers for training in Medical Deep Sea Diving and Submarine Medicine Technic.

For Medical Deep Sea Diving, hospital corpsmen holding the ratings of HM1 and HM2 are eligible provided they meet the prerequisites outlined in the Catalog of Hospital Corps Schools and Courses. For those interested in this specialty a recent article published in the September-October 1954, Volume 5, Number 5 issue of the Medical Technicians Bulletin entitled, "The Corpsman Goes Deep Sea Diving" may be enlightening.

For those interested in submarine medicine technic, the training is open to HMCs, HMCAs, HM1s, and HM2s, who meet the prerequisites set forth in the Catalog of Hospital Corps Schools and Courses, with the exception that the requirement of being a graduate of the advanced Hospital Corps School (Class B) is no longer required, and who meet the basic battery test score requirement for initial submarine training. Reference should also be made to BuPers Notice 1540 of 5 June 1953, which is Change No. 1 to BuPers Instruction 1540.2, in regard to basic battery test score requirement. A change in the Catalog of Hospital Corps Schools and Courses will be forthcoming. (Hospital Corps Training-BuMed)

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Postgraduate Short Courses

The Armed Forces Institute of Pathology will present the following postgraduate short courses during the periods indicated.

Ophthalmic Pathology 21-25 March 1955

This course is designed for the ophthalmologist and the general pathologist. Material will be presented by lectures, demonstrations and the

study of microscopic slides. Ten spaces have been reserved for the use of this Bureau. Interested medical officers should forward requests for attendance via official channels in time to reach BuMed prior to 15 February 1955.

Travel and per diem orders chargeable against Bureau funds will be authorized those approved for attendance. Priority will be given requests from medical officers who are Board certified, Board qualified, or senior residents in Ophthalmology or Pathology.

Application of Histochemistry to Pathology 2-4 May 1955

This course is designed for medical officers who are Board certified, Board qualified, or well advanced in the study of Pathology. The material will be presented by lectures, laboratory demonstrations, and the study of microscopic slides. Five spaces have been reserved for the use of this Bureau. Interested medical officers should forward requests via official channels in time to reach BuMed prior to 1 April 1955.

Travel and per diem orders chargeable against Bureau funds will be authorized those approved for attendance. Priority will be given requests from medical officers who are Board certified, Board qualified, or senior residents in Pathology. (ProfDiv, BuMed)

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BUMED NOTICE 7303

30 December 1954

From: Chief, Bureau of Medicine and Surgery

To: All Activities under Management Control of the Bureau of Medicine and Surgery

Subj: Status of Allotment, NAVEXOS 3443; reporting of reservations on

Ref: (a) Hospital Accounting Instructions, NavMed-P-1296, Change 21

This Notice invites attention to paragraph 45200.5i of reference (a) requiring inclusion of information on allotment reservations in block 9 of the Status of Allotment Report, NAVEXOS 3443.

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SECNAV NOTICE 6300

5 January 1955

From: The Secretary of the Navy

To: Distribution List

Subj: Navy and Marine Corps Cancer Education Program

Encl: (1) U.S. Navy Cancer Education Program Kit

This Notice institutes a basic education program on cancer control for all Navy and Marine Corps military, civilian, and dependent personnel.

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BUMED INSTRUCTION 6230.1 SUP 1

19 January 1955

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Immunization Certificate, DD Form 737

Ref: (a) Chapter 22, Section VIII, Manual of the Medical Department, USN
(b) BuMedInst 6230.1
(c) International Certificate of Vaccination of the World Health Organization, PHS-731

This Instruction informs addressees that the United States Navy Immunization Record, NavMed 585, has been superseded by the Department of Defense Immunization Certificate, DD Form 737, and provides guidance in the use of the newly adopted form pending revision of references (a) and (b).

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PREVENTIVE MEDICINE SECTION

Communicable Disease Control

Occurrence of Influenza, July 1953 to June 1954

Investigators and diagnostic laboratories located in universities, hospitals, and Federal and State agencies, including Army, Navy, and Air Force installations, have collaborated since 1948 in reporting the occurrence of specifically diagnosed influenza as a part of the World Health Organization Influenza Study Program in the United States. These communications are summarized weekly in the Communicable Disease Summary of the National Office of Vital Statistics, Public Health Service, and are also distributed to health officials and interested research workers

in the United States and other countries, and to the headquarters of the World Health Organization in Geneva. The program, operating on a worldwide basis, also facilitates the exchange of newly isolated strains of influenza virus for study purposes.

During the period covered by this report, July 1, 1953, to June 30, 1954, the incidence of influenza in the United States was the lowest in 4 years. It was characterized by the absence of outbreaks caused by influenza A virus, although infections with influenza B and influenza C were recorded.

The failure to identify epidemic influenza A occurred in spite of extended epidemiological and laboratory studies by the military services and the Public Health Service, and in spite of close surveillance by State health departments and the Epidemic Intelligence Service of the Communicable Disease Center, Public Health Service. During almost every month of the winter season, Army area laboratories reported a few instances of a significant increase in titer of serum antibodies against influenza A in the hemagglutination inhibition tests. However, no report of the isolation of influenza A virus in the United States was received at the WHO Influenza Information Center.

Influenza B was diagnosed serologically in a number of high school students in Santa Clara County, Calif., who had respiratory illnesses in the middle and latter part of January. In February, March, and April, localized outbreaks of influenza B were identified in other parts of California. In late March and early April, a minor outbreak of influenza B occurred at a naval installation in Illinois. Strains of virus were recovered which appeared to differ from the Lee strain. Influenza B was also serologically confirmed in localized areas of Minnesota during March and April.

Influenza C virus was recovered first in December 1953, at a naval installation in Illinois, and then sporadically during the remainder of the winter. It was also isolated from 4 members of 1 family and from 2 other individuals in Norfolk who had a respiratory illness in April.

The mortality experience during the winter season gave no evidence of any increase as a result of influenza, as, according to the National Office of Vital Statistics, is usually the case when an epidemic is prevalent.

In other parts of the Western Hemisphere, influenza A was identified in two small outbreaks in Puerto Rico in March, and two isolated strains were found to be similar but not identical to A/FW/1/50 and A/FLW/1/52.

In South Africa, during late May and June 1954, there was a sharp outbreak of influenza. Recovered strains examined at the World Health Influenza Center in London proved to be influenza A similar to the Liverpool strain A/England/1/51. In Australia, influenza A was also prevalent during the same period. (Public Health Reports, Dec., 1954; D. J. Davis, M. D., influenza Information Center, WHO Influenza Study Program in the United States, National Institutes of Health, Public Health Service)

Influenza Vaccines in Great Britain

An announcement of influenza vaccine trials is made in the British Medical Journal, November 13, 1954, by the Medical Research Council Committee on Clinical Trials of Influenza Vaccine of the Ministry of Health. In this announcement, there is reference to a controlled study carried out in 13,000 civilian volunteers during the winter of 1952-1953. The vaccine contained equal proportions of FM-1 (USA 1947) and the Liverpool (England 1951) strains of influenza A viruses. A 40% reduction in clinical illness was obtained in the vaccinated group (British Medical Journal of November 28, 1953, p 1173).

Following favorable American reports on oil-adjuvant influenza vaccines (as a method of obtaining greater and more persistent antibody responses) trials of this type of vaccine have been carried out in several student groups since December 1953. These trials have apparently confirmed earlier American reports as to the efficacy of the vaccine in promoting high antibody titers and as to its freedom from reactions.

During the winter of 1954-1955, additional field trials will be carried out in 16,000 volunteers. Four vaccines are being used. Three vaccines--one saline and two oil-adjuvant--contain the England 1954 strain of influenza A. The fourth vaccine contains influenza virus B.

The results of these tests will be awaited with interest because the compositions of the vaccines are different from those being used in the Armed Forces this winter and since there is interest in the oil-adjuvant vaccines as a means of avoiding the annual vaccination against influenza which must be carried out with saline influenza vaccines.

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Tuberculosis Control

Photofluorographic Detection of Cardiovascular Disease in a General Hospital

The importance of the chest survey photofluorogram in the discovery of pulmonary lesions is well recognized. Recently, this method has also been used to detect cardiovascular disease and, in this particular paper, in routine admissions to a general hospital.

A study of this type has several inherent limitations, namely: (1) Cardiac patients with normal cardiac silhouettes will be overlooked. (2) There is a significant difference in interpretation, not only by equally skilled radiologists, but also by the same radiologist on successive days. (3) There is a wide variation in the degree of accuracy in detecting cardiovascular disease because of the difference in the individual criteria of

abnormality. (4) The frequency of abnormal cardiovascular silhouette varies with the segment of population examined.

This survey consisted of 6439 adults, 709 of whom were suspected of having a cardiovascular abnormality on the basis of the admission photofluorogram. Follow-up study of 595 revealed 497 (83%) to have cardiovascular disease. Of 416 (69%) patients evaluated for prior knowledge of cardiovascular disease, 196 (47%) were unaware of the presence of such disease. This is consistent with the results of other studies.

The frequency of cardiovascular disease in the population studied is much higher than that reported in the usual mass survey. This is primarily due to the facts that the average age of the patients was greater, and that a significant number of patients were hospitalized because of cardiovascular disease.

The surgical group consisted of 3305 adults. Five hundred and twelve were suspected of having abnormal cardiovascular silhouette. In spite of the fact that the group is biased by selection, which is unavoidable because the surgeon does a certain amount of screening, 368 out of the 437 individuals who were followed up had verified cardiovascular disease. Because the findings were called to the attention of the surgeons, many of the patients benefited. In a few cases the complete cardiovascular study led to a correct diagnosis of the patient's illness.

The medical group was relatively small because it was limited to ambulatory patients, and many patients admitted on the service were quite ill. As a result, many with known cardiac disease were not included in this study. The group totalled 477; 156 had abnormal photofluorograms. One hundred and fifty-four were followed, and 121 of these had cardiovascular disease. The frequency of abnormal photofluorograms is probably a reflection of the older age of the medical patients.

Of the 2657 women in the young obstetrical group, 41 were suspected of having a cardiac lesion, which is in the range that one might expect in young adults selected at random.

No cardiovascular abnormalities were discovered on the lateral photofluorogram which was taken in addition to the P-A film on all patients except the very obese and pre-natal. The lateral view was of value in appraising some of the factors such as body build, scoliosis, and pectus excavatum which increased the number of false positive diagnoses. In essence, the lateral projection helped to increase the accuracy of the reading but did not increase the absolute yield. (New England J. Med., 2 Dec., 1954; H. D. Batt, J. M. Allen, F. H. Treder, and R. Shapiro, New Haven, Conn.)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

Insect and Rodent Control

Attack on Insect and Rodent Vectors at Preventive Medicine Unit No. One

The organized attack on insect enemies in the United States began in 1854, just 100 years ago last year. Battle lines were drawn and the first offensive sorties were carried out in that historic year by Townend Glover, working for the Federal Government, and Asa Fitch, working for New York State. Following the trail blazed by these pioneers, were C. V. Riley and L. O. Howard, both giants in the earlier days of professional entomology. The latter was one of the earliest and most dynamic workers in medical entomology in America. The succeeding procession of stalwarts goes on into our own day. From simple beginnings, great strides have been made in the unending struggle of man against the insect world. Last year, as professional entomology celebrated its centennial, some 4500 men and women entomologists in the United States had taken up the challenge, and today they are continuing the attack in one way or another.

The Navy has not been unmindful of its responsibilities in this epic struggle and since the beginning of World War II has placed increasing emphasis on combat operational readiness against these six-legged enemies- particularly the vectors of human disease and misery. One of the earlier signal efforts along these lines was the establishment of malaria and other epidemic disease control units.

The U. S. Navy Malaria and Mosquito Control Unit No. 1 was commissioned on 1 July 1949, at the U. S. Naval Air Station, Jacksonville, Florida. On 12 November 1952, the Unit was redesignated U. S. Navy Preventive Medicine Unit No. 1. It is under the military command and coordination control of the Commandant, Sixth Naval District, and under the management and technical control of the Bureau of Medicine and Surgery. The Unit's strategic location at the Naval Air Station, where air support is readily available, greatly enhances its value and capacity for immediate service mobility.

The services available from Preventive Medicine Unit No. 1 are limited to the vector control phases of the naval preventive medicine program. This Unit exists primarily to supplement the efforts of local medical activities to recognize and define vector problems of naval importance and to devise means of prevention or control. Here the term "vector" is used in the broad sense, as defined by SecNav Instruction 5420.17, to include all organisms which: play a significant role in the transmission of disease to man; act as intermediate hosts or reservoirs

of disease; present problems of sanitary or hygienic significance; or otherwise affect the health and efficiency of personnel. The Unit provides the following specific services to the Naval activities of the Sixth Naval District:

1. Technical consultative assistance with problems relating to vector prevention and control.
2. Study of disease vectors and supplementation of local control services where indicated and feasible; recommendations and technical assistance for special area-wide services for vector control.
3. Insecticides suitable for aerial and ground application for the control of mosquitoes, sandflies, and other vectors to activities that can justify the need for them.
4. Nonstandard and special-use insecticides where their need is indicated and can be justified.
5. Specialized control and survey equipment on a custody basis where such equipment is needed and can not be procured otherwise.
6. Maintenance service on specialized dispersal equipment. This includes modernization of equipment and the replacement of worn parts.
7. Aerial spray services for naval activities near Jacksonville where the need is justified.
8. Vector survey, detection, forecasting, and laboratory identification services.
9. Current literature and guides relating to arthropod and rodent control recommendations and technics.
10. Basic advanced, and refresher training in pest and vector prevention and control for military and civilian personnel responsible for pest control programs at naval activities and for reserve Medical Department personnel. This includes indoctrination of personnel in the safe handling and use of pesticides and in specific methods of disease vector control.
11. Periodic inspection service, in cooperation with the District Public Works entomologist, for all station pest control programs in the Sixth Naval District, and submission of reports as necessary.
12. Field service testing and development when authorized.
13. Liaison with governmental and other agencies as necessary for accomplishment of the Unit's mission.

Preventive Medicine Unit No. 1 is under the direction of an Officer-in-Charge who is a Medical Service Corps officer. Four departments make up the internal structure of the organization. These include the Administration, the Operations, the Testing and Development, and the Training Departments, headed up by MSC officers and a Civil Service entomologist. Seven enlisted personnel are included in the complement of the Unit, six of whom are hospital corpsmen, the other a Chief machinist Mate. A machinist mate billet was established in order to support the

equipment maintenance and overhaul service. This billet has also been valuable for training operators of spray equipment in proper maintenance and operating technics.

In the early years of the Unit's existence, an extensive program was established for testing aerial insecticide dispersal devices, developed by the Bureau of Aeronautics for use on military combat-type aircraft. Much of this work was conducted in conjunction with the Army Chemical Corps. The Unit pioneered in the development of automatic aircraft disinfection equipment. The Officer-in-Charge was responsible for devising a new spray system, whereby aircraft traveling outside of, or entering, the continental limits of the United States could be automatically treated with insecticide to eliminate the spread of disease-bearing or other noxious insects. Previously, hand-applied aerosols had been used exclusively. Several modifications were required in the automatic disinfection equipment; it is still in the testing phase. This project was moved to the West Coast in 1952.

In 1952, a project was established for the purpose of converting into insecticide dispersal equipment Todd Type E Smoke Generators, which had been installed on the fantails of destroyers for the purpose of laying passive defense smoke screens. These smoke generators were removed from ships which had been placed in the "mothball fleet."

An excellent multipurpose insecticide dispersing machine resulted from this project. The contrivance, now known as the "MIDA", can be used for residual spraying, misting, and wet or dry dusting. Thirty-four of these machines have been distributed to naval installations in the United States and foreign shore stations. The conversion plans and specifications were sent to 38 activities.

Another machine which was converted from the smoke generator by the Testing and Development Department can be used in termite control operations. One machine of this type has been successfully used over a period of 2 years for both soil poisoning and surface treatments. As a result sixteen sets of the conversion plans and five unconverted smoke generators were sent to naval activities requesting them.

The Operations Department was not idle during this time. Instance the Kansas City flood of 1951. In July of that year members of Preventive Medicine Unit No. 1 were sent to the Kansas City disaster area to assist in emergency insect and rodent control measures. Within 24 hours after the Unit received a dispatch from the Bureau of Medicine and Surgery, two planes loaded with insecticide spray equipment and personnel were under way. Insect control was a necessity as the flood waters rose and inundated the stockyard and other areas, drowning many animals and causing widespread organic decomposition. These sources produced enormous fly populations. Upon arrival, the local health authorities and U.S. Public Health Service officials were contacted. A cooperative fly-control program

was planned and put into effect. Daily continuous spraying was carried out for a period of 2 weeks in the flooded sections of the city and adjacent areas.

The foregoing example typifies the mobile and flexible nature of this Unit which is on call 24 hours a day. The Operations Department has been called upon frequently to conduct field inspections, surveys, and investigations of vector problems, both within and outside the Sixth Naval District. In this respect, it functions, so to speak, as a sort of mobile vector-combat-intelligence service.

The Training Department as such is newly conceived in name only for the Unit has long exerted serious efforts in the direction of this important aspect of vector control operations. A training program for the U. S. Naval Reserve Medical Department personnel has been in progress at the Unit since November 1948. At present, classes convene the third Wednesday of each month throughout the year. Medical Corps, Medical Service Corps, and Hospital Corps personnel are eligible to attend the 14-day course which includes lectures, demonstrations, and field work with emphasis placed on all phases of arthropod and rodent vector recognition and control. To date 226 Reservists have taken advantage of this opportunity for serving on annual training duty with the Unit. The need for, and interest in, such training duty are borne out by the fact that the number of trainees increased from 26 in 1949, the first full year of operation, to more than 58 in 1954.

In addition to the Reserve program, training services offered by the Unit are many and varied. For example, District pest control program personnel, both military and civilian, may receive on-the-job training in pest and vector procedures, and indoctrination in the safe handling and use of pesticides. Decentralized training is also available on request at all stations. Through these various training media, the Unit hopes to effect more rational, effective, safe and economical vector and pest control throughout the District. Although the saving and conservation in material and human resources now being realized are extensive, even greater saving is clearly envisaged through future emphasis on training.

The contribution of this Unit in the over-all health, welfare, and comfort of the Navy in the Sixth Naval District and elsewhere is of course an intangible value. Perhaps its worth is best attested to by the officers and men of the many activities who continue to look to the Unit for assistance and support year in and year out in the solution of their problems and in their attack on insects and rodents.

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General Sanitation

Food Infection Possible in Synthetic-Cream-Filled Pastry

The Oakland City and California State Health Departments have recently reported studies of cream-filled pastries made with new "synthetic"

filling. It had been alleged that the synthetic substitutes for standard cream filling of pies and pastries would support bacterial growth poorly. However, a few initial studies made by the State Health Department Laboratory on pies from the shelves of distributors have shown very high total bacterial counts with 1000 to 180,000 potentially dangerous staphylococci per gram. In nearly every instance these staphylococci gave all the cultural reactions consistent with the pathogenic and/or toxigenic strains of staphylococci, i. e., those strains associated with bacterial food intoxication.

As a result, the State of California has determined that the same strict rules for refrigeration of cream-filled pastries should be applied equally to those made with so-called synthetic cream filling. The ingredients of these mixtures, while omitting cream, do include dry skim milk, egg white, starch, sugar, agar, meringue powder, and shortening, and should support bacterial growth.

These research studies underscore the necessity for constant refrigeration of all types of cream-filled pastry during the interim between baking and serving. (Environmental Sanitation Technician Course, U.S. Naval Hospital, Oakland, California)

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Permit No. 1048

OFFICIAL BUSINESS

WASHINGTON 25, D. C.

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BUREAU OF MEDICINE AND SURGERY

PENALTY FOR PRIVATE USE TO AVOID
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